

**PPL MONTANA, LLC**  
**THOMPSON FALLS UPSTREAM FISH LADDER PROJECT**  
**TECHNICAL ADVISORY COMMITTEE MEETING**  
 December 3, 2013 @ 10:00 AM – 3:00 PM  
 3720 North Reserve Street, Hilton Garden Inn  
 Missoula, Montana

PPL Montana, LLC (PPLM) held the Thompson Falls Technical Advisory Committee (TAC) on December 3, 2013 at the Hilton Garden Inn in Missoula. The meeting started at 10:00 AM and was adjourned at 3:00 PM.

**Meeting Attendees**

<b>Name</b>	<b>Agency</b>	<b>Email</b>	<b>Phone (406)</b>
<b>Brent Mabbott</b>	PPL Montana, LLC	lbmabbott@pplweb.com	533-3447
<b>Jon Jourdonnais</b>	PPL Montana, LLC	jhjourdonnais@pplweb.com	490-1802
<b>Andy Welch</b>	PPL Montana, LLC	atwelch@pplweb.com	533-3412
<b>Steve Leathe</b>	PPL Montana, LLC	saleathe@pplweb.com	268-2347
<b>Brian Sugden</b>	Plum Creek Timber Co	brian.sugden@plumcreek.com	892-6368
<b>Wade Fredenberg</b>	USFWS	wade_fredenberg@fws.gov	758-6872
<b>Elena Evans</b>	MDEQ	eevans2@mt.gov	444-0531
<b>Kenny Breidinger</b>	MFWP	kbreidinger@mt.gov	827-9320
<b>Jay Stuckey</b>	MFWP	jstuckey@mt.gov	827-9205
<b>Ladd Knotek</b>	MFWP	lknotek@mt.gov	542-5506
<b>Craig Barfoot</b>	CSKT	craigb@cskt.org	675-2700 ext. 2295
<b>Mary Gail Sullivan</b>	NorthWestern Energy	marygail.sullivan@northwestern.com	497-3382
<b>Bill “Dusty” Rhoads</b>	NorthWestern Energy	bill.rhoads@northwestern.com	497-3496
<b>John VanDaveer</b>	NorthWestern Energy	john.vandaveer@northwestern.com	497-2710
<b>Ginger Gillin</b>	GEI Consultants	ggillin@geiconsultants.com	240-3231
<b>Kristi Webb</b>	New Wave Environmental	kwebb@nw-enviro.com	239-4884

**Introductions**

- Discussion on the sale to NorthWestern Energy (NWE)
  - Background about NWE (Bill Rhoads)
  - Transition process (John VanDaveer)
    - Timeline – Purchase- Sale agreement September 26, 2013
    - Public Service Commission application – Target filing by December 20, 2013
      - Application available online on the Montana Public Service Commission (PSC) website
      - Hearing on application will occur around June 2014
      - Estimate 270 days to process application
    - Regulatory Filings – NWE hopes to file by end of year (December 31, 2013)
      - Likely transition from PPLM and NWE to occur between mid-year to 3<sup>rd</sup> quarter 2014 (depends on timing of PSC approval)
  - Permitting/Compliance (Mary Gail Sullivan and Jon Jourdonnais)
    - License compliance and requirements continue through transition
  - Wade Fredenberg – Will this transition (PPLM to NWE) affect the transfer of Kerr Dam from PPLM to CSKT?
    - Bill Rhodes – The transfer from PPLM to NWE should not affect transfer of Kerr to CSKT. Transfer process is already in place along with current schedule.

- Any questions about NWE and the transition, direct them to Jon Jourdonnais.
- Memorandum of Understanding signed September 20, 2013, filed with FERC in November 2013
  - Approved by USFWS, CSKT, MFWP
  - Voting status – PPLM, USFWS, CSKT, MFWP
  - Starts January 1, 2014 and lasts through December 31, 2020 (7-years)
  - Starts reserve account \$150,000 (max limit \$250,000)
    - \$100,000 annual funding
- Thompson Falls Pamphlet/Brochure
  - Available to distribute
  - PDF copy will be made available for electronic distribution

## 2013 Activities

- Fish Ladder Operations overview for 2013 (Brent)
- Fisheries Baseline Studies (refer to power point presentation)
  - Spring Electrofishing – Thompson Falls Reservoir
  - Fall Electrofishing – Above the Islands
  - Fall Gillnetting – Thompson Falls Reservoir
- Upstream Fish Passage - March 13 – October 15, 2013 (refer to power point presentation)
  - Comments on data presented: Ladd Knotek pointed out that salmonid movement upstream into ladder appeared to continue to occur post-spawning period (after July 1)
    - Why are salmonids moving late (post-spawning?)
    - Potentially evaluate salmonid species composition pre-May 15
    - Evaluate size of fish species and timing (sub-adult or adults movement)
      - Pre-July 1 and Post-July 1
  - MFWP receiving reports from anglers that they are observing rainbow with ad clips in the Thompson River drainage
  - Are walleye using Snake or Columbia fish passage facilities? (question from Craig Barfoot)
    - Check the fish passage center online database
  - What is the biomass of fish passed over the dam annually? (Wade Fredenberg)
- 2013 TAC Funded Activities
  - Thompson River Tributary Work (Kenny and Brent, refer to power point presentation)
    - ✓ Big Rock Creek, Indian, Lazier, Twin Lakes completed in 2013
  - Spatially Explicit Decision Support Modeling in support of Strategic Prioritization of Native Trout Restoration in the Lower Clark Fork River (Wade Fredenberg)
    - ✓ Doug Peterson from Washington State – developing conceptual model, data input, identification of parameters
    - ✓ Anticipate to run model and evaluate in spring 2014
  - Avista Studies
    - ✓ HDX remote reader in lower Prospect Creek
      - A HDX PIT tag array was installed in lower Prospect Creek in late September of 2012 and was operated throughout the 2013 field season. The lower antenna at this site was broken and not operational from late May through mid-August of 2013 due to high flows. Three bull trout have been detected at this site during 2013, one juvenile originally captured and PIT tagged in Crow Creek in

2012 and two adults, one previously captured moving upstream in the Prospect Creek weir trap in 2012 and the second an adult that was captured by PPLM electrofishing below TFalls dam in 2011 and captured in the PPLM TFalls fish ladder and passed upstream of the dam in 2012 prior to its detection on this lower Prospect Creek array in 2013.

- ✓ Bull trout sex identification marker
  - Researchers at the Flathead Lake Biological Station, associated with the University of Montana, began working on the development of a bull trout sex identification genetic marker that could be used in a number of Avista projects to determine if fish are male or female. This genetic marker would complement the current bull trout passage program by verifying the gender of transport fish and be useful for other studies in the project area. The lab was successful in identifying one marker that was 95% accurate in matching the field call for known sex bull trout. This marker will be available for use by geneticists at the Abernathy Fish Technology Center Conservation Genetics Laboratory (separate test) where bull trout genetic assignments that are used for fish passage decision making are currently analyzed. Funding for this project came from a cost-share between Avista, Kalispel Tribe, MFWP and PPLM.
- Bull trout genetics
  - ✓ Ladd submitted bull trout genetics in Fish Creek, Cedar, and Rattlesnake (sample from Rattlesnake not submitted for analysis in 2014)

#### **Scheduled Activities for 2014**

- Fisheries Baseline Studies
  - Spring Electrofishing -Upper and Lower Reservoir
  - Fall Electrofishing
    - Above Islands Complex
    - Paradise to Plains (every other year)
- Gillnetting in Thompson Falls Reservoir
- Fish Ladder scheduled to open in mid-March 2014
  - Brent proposed sub-sampling 80 fish (lengths and weights) of one species per week
    - Collect lengths and weights of the first 80 fish of one species per week, then just count totals of that species for the rest of the week. Week starts on Monday and ends on Sunday. – Proposal approved by MFWP

#### **Proposed activities in 2014 (Brent)**

- Electrofishing below dam in spring 2014, insert HDX tags in salmonids, and test if remote antennas at the TFalls ladder detect fish
  - Proposed activity focus on efficiency of HDX PIT tag readers
  - Focus only on salmonids
  - Proposed activity approved by TAC
- Northern Pike study (repeat of 2009 activities?)
  - USFWS – No
  - MFWP – No
  - Hold off on this study until after graduate study (2014-2016)
- MFWP – testing bio-contaminants in fish in Noxon Reservoir (funding through Avista)
  - Pike, walleye, perch , and smallmouth in four-inch size groups

## 2014 Proposals for TAC Funding

- Thompson River (Kenny and Brent)
  - Murr Creek, Mudd Creek, Alder Creek surveys scheduled for 2014
  - Alder Creek diverted into Dry Creek in Lone Pine Reservoir
  - Funding approved in 2013 and will be completed in 2014
- MSU Graduate Studies (Chris or Brent) – summary provided in power point
  - January 1, 2014 – December 31, 2016
  - Evaluation of juvenile bull trout outmigration in Thompson Falls Reservoir
    - Estimate travel time
    - Describe travel route
    - Describe habitat use
    - Estimate survival rate
  - Approved by TAC to fund project through 2016
  - Avista is interested in continuing the study downstream
    - Once fish leave Thompson Reservoir, where do they go?
      - Avista proposes to install a couple of additional tracking stations to check fish movement. Graduate student would be available to monitor fish and Avista staff will maintain equipment.
- Genetics (Ladd and Craig)
  - Amount - \$10,000
  - 2014 – Rattlesnake Creek bull trout genetics (MFWP Ladd Knotek)
  - 2014 – South and North Fork Jocko River bull trout genetics (Craig Barfoot)
  - Approved by TAC in 2014
- Fidelity Account Update
  - Balance on January 1, 2014 will be \$250,000
    - \$51,000 dedicated to the MSU Graduate Study in 2014
    - \$199,000 available in 2014
- USFS culvert removal Beartrap Creek? (project discussed in 2012 TAC meeting by Jen Mickelson)
  - No proposal has been submitted by USFS, pending new hire at USFS

## TDG – Management

- TDG/GBT monitored when spring flows exceed 75,000 cfs
- Andy evaluates spring flow forecasts and if flows are projected to be greater than 75,000 cfs, then PPLM will monitor TDG/GBT. Currently PPLM has a good understanding of TDG relationship with flows below 75,000 cfs, but more data when flows are greater than 75,000 cfs is needed.
- PPLM has a new system in place to automate flow recording when panels/bays are pulled. Currently, will maintain data collection of panels open during fish ladder checks. Andy will confirm that nomenclature from ladder database match the automated system at the powerhouse.

## Avista Fish Ladder(s)

- Cabinet Fish Holding Facility under construction 2013-2014
  - Fish enter existing fish trap and will be handled in the new holding facility
  - Fish ladder design is complete, but construction is on hold until issues with fish passage approval is settled.
  - State denied import of bull trout (concern of pathogens) from Idaho in spring 2013
  - State going to propose new ARM rules, to provide state more flexibility on management of fish pass (import)

- Uncertainty if WCT going to be passed
  - Potentially pass Cabinet (experimental basis) but then not allowed past Noxon
- Noxon ladder is at 30% design
- Until ladder(s) active, continue trap and transport policy
  - If a bull trout (captured below Cabinet Gorge Dam) is genetically assigned to Region 4, Avista will continue to transport to Thompson River (Region 4).

### 2013 Annual Report Schedule

Task/ Deliverable	Preparers	Submittal to TAC	TAC Comments Due	Comments Incorporated - Submit to TAC for Final Approval	Finalized with Approval from TAC Complete	E-File with FERC	E-Archive on Website
<b>ANNUAL REPORTS</b>	PPLM, GEI, and New Wave	10-Feb-14	12-Mar-14	21-Mar-14	27-Mar-14	31-Mar-14	31-Mar-14

Note: The Memorandum of Understanding (MOU) dated September 20, 2013 (expires December 31, 2020) defines the TAC quorum as one voting representative from PPLM, USFWS, CSKT, and MFWP. Quorum decisions by the TAC will require each of these agencies to be present in person or by proxy.

### Scheduling 2014 TAC Meeting(s)

- Topic for 2014 Annual Meeting:
  - In 2015, requirement to prepare a comprehensive report to address 1) fish passage and 2) reservoir monitoring report.
  - Need to discuss schedule and options to delay/modify schedule. How do we address requirements of BO, are we on track, do we need to modify schedule?
- Date, Time, Location: TBD (Next December 2014)

### Final Comments

- Brent will send out monthly updates monthly about ladder and related activities
- Power point presentation provided during the 2013 Annual Thompson Falls Fisheries TAC meeting will be posted on the project website:  
<http://www.pplmtfallsfishpassage.com/notes.html>

### Meeting Adjourn

**PPL Montana**  
**Thompson Falls Hydroelectric**  
**Project Fish Passage Annual**  
**Report**

TAC Meeting  
December 3, 2013  
Missoula, Montana

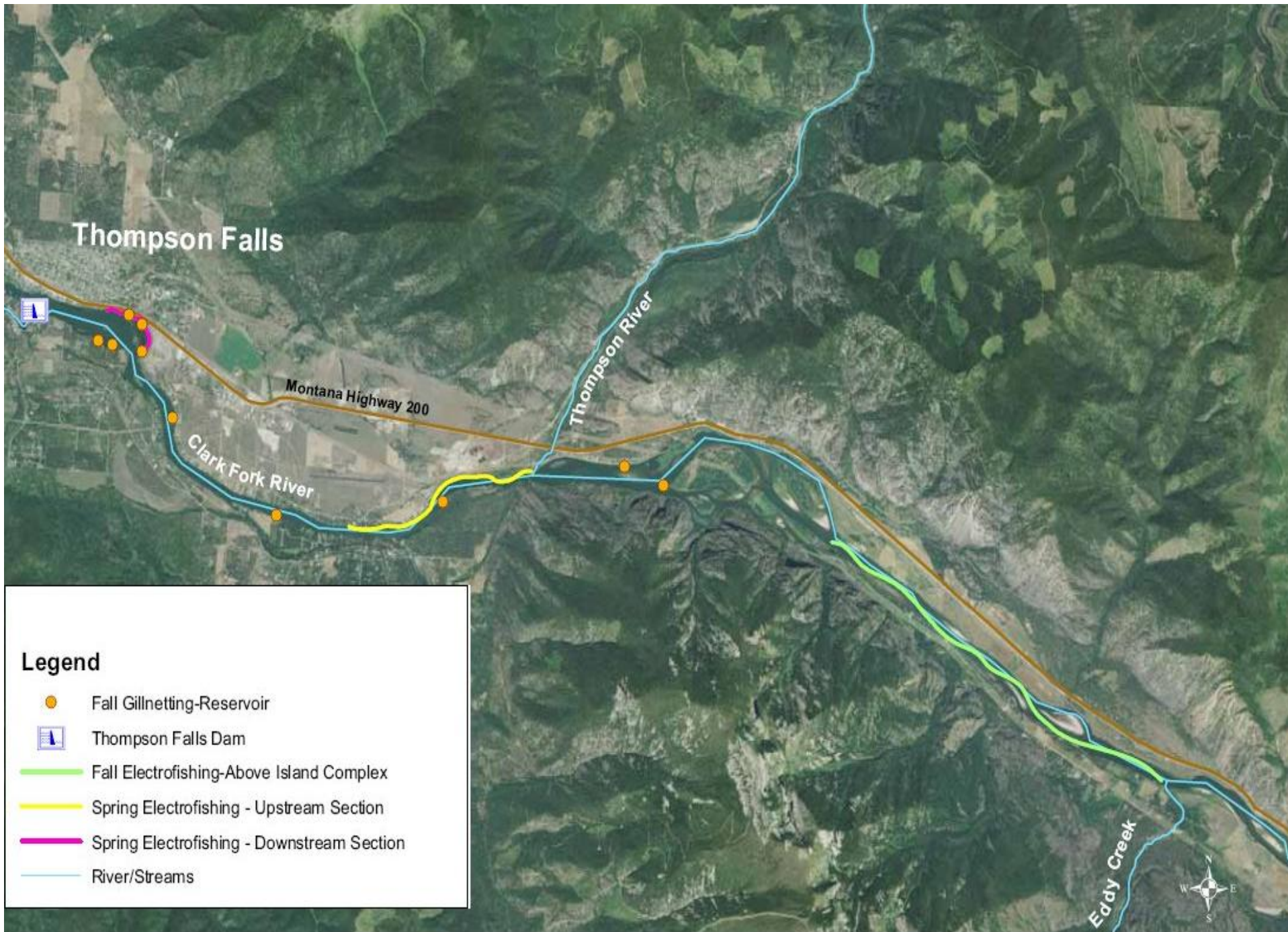
# Agenda

- Introduction
- Sale to NorthWestern Energy
- Revised MOU
- Thompson Falls Pamphlet/Brochure
- 2013 Activities and Results
- 2014 Activities and Proposals
- Funding/Account Status
- Avista Fish Passage
- 2013 Annual Report Schedule
- 2014 Annual TAC Meeting

# 2013 Activities

- Spring Electrofishing - Thompson Falls Reservoir
- Fall Electrofishing – Above Islands
- Fall Gillnetting – Reservoir
- Fish Ladder Operations
- Thompson River Studies
- Other TAC Funded Studies
  - Modeling
  - Avista studies



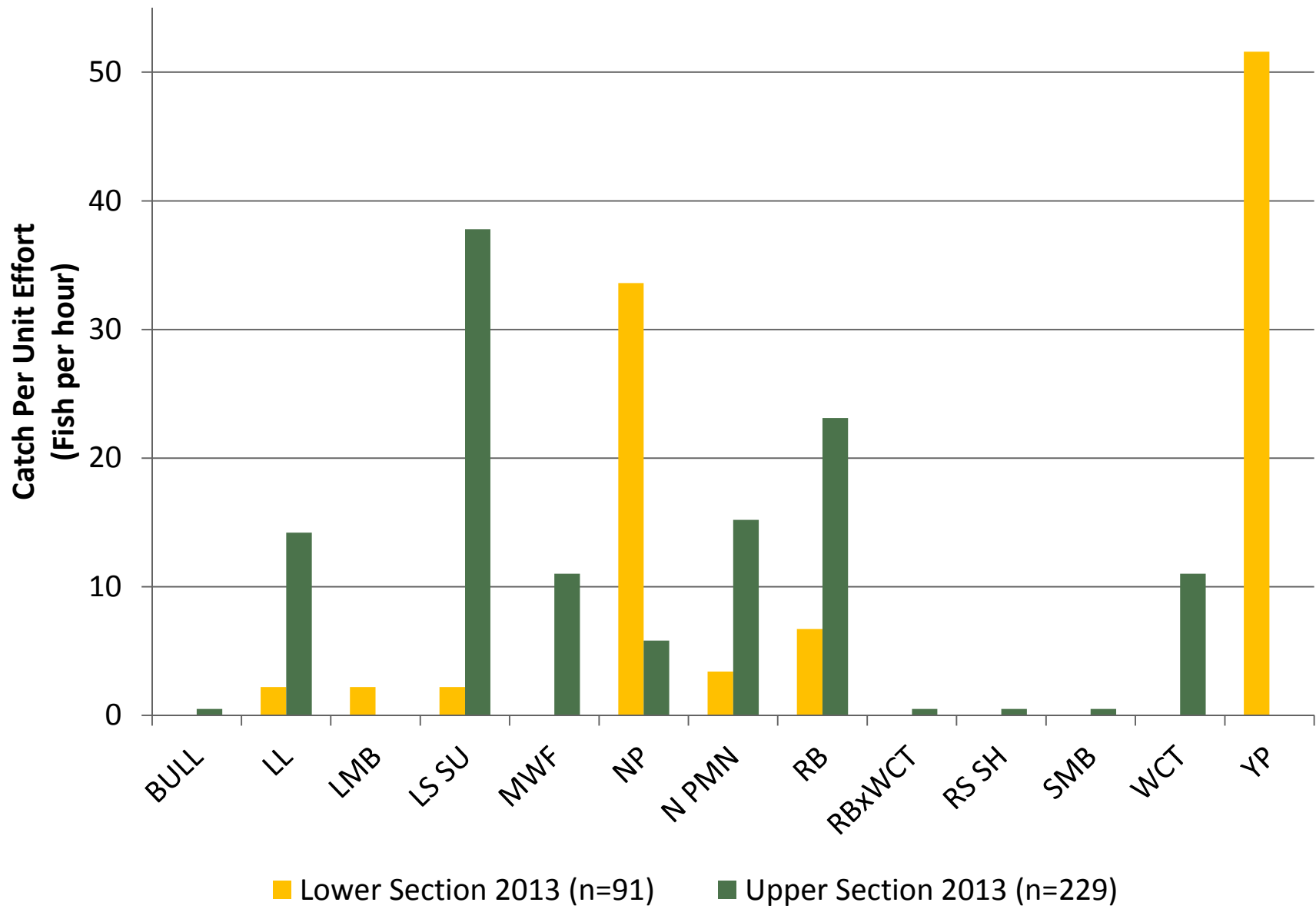


**Legend**

- Fall Gillnetting-Reservoir
- 🏰 Thompson Falls Dam
- Fall Electrofishing-Above Island Complex
- Spring Electrofishing - Upstream Section
- Spring Electrofishing - Downstream Section
- River/Streams

0 0.4 0.8 1.6 SCALE

## Spring Electrofishing - Thompson Falls Reservoir April 2013



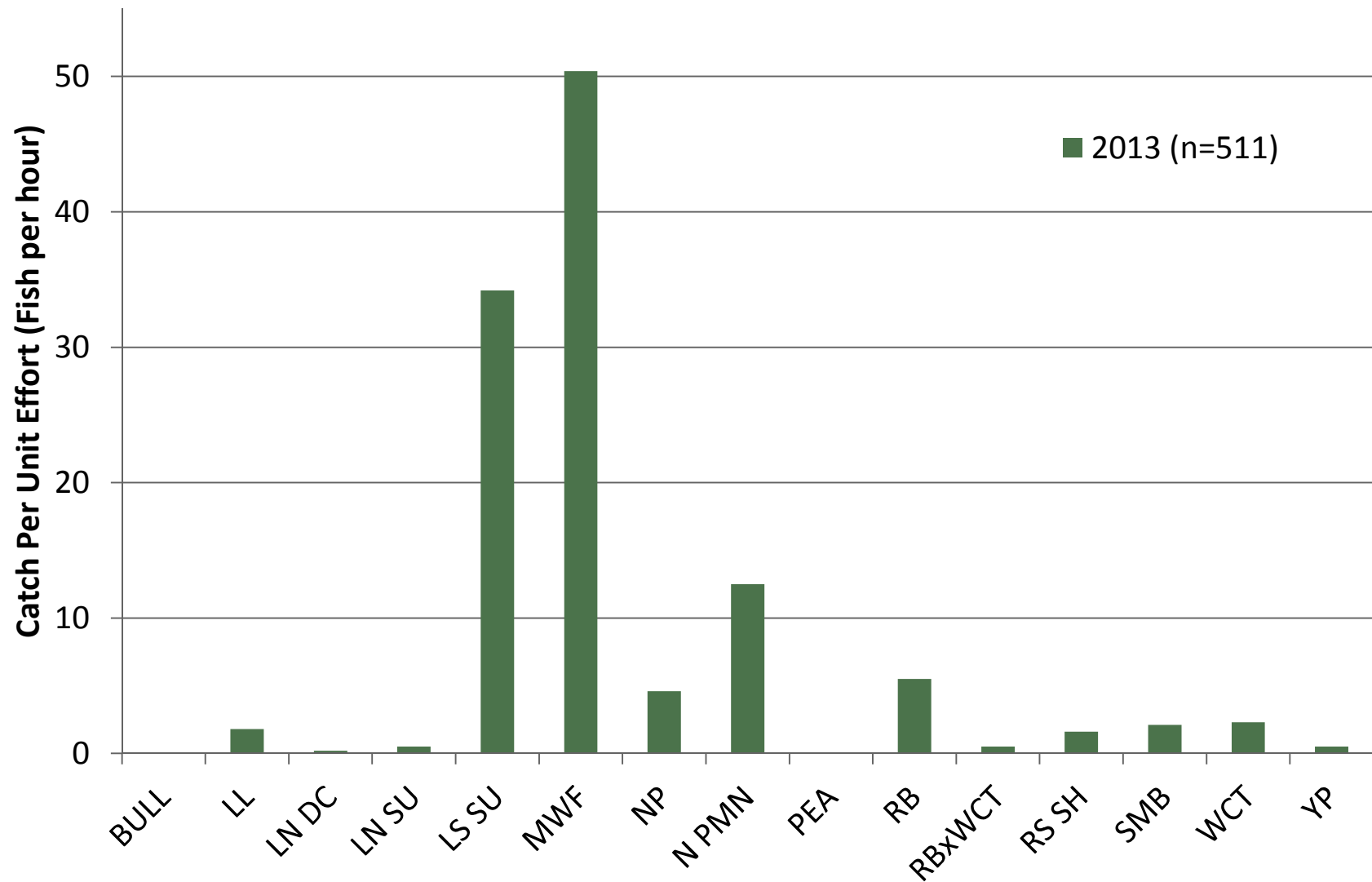
## Spring Electrofishing Lower Section 2009 – 2013 Fish Per Hour (CPUE)

<b>Species</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
BL BH	3.4	1.1	0	1.2	0
BULL	0	0	0	1.2	0
LL	0	0	0	10.9	2.2
LMB	34	3.3	6.9	9.7	2.2
LN SU	0	0	0	7.3	0
LS SU	18.7	3.3	1	27.9	2.2
MWF	0	0	0	1.2	0
NP	17	15.2	16.8	12.1	33.6
N PMN	12	1.1	1	20.6	3.4
PEA	0	0	0	1.2	0
PUMP	3.4	2.2	4.9	2.4	0
RB	0	0	1	4.8	6.7
RS SH	1.7	0	0	0	0
SMB	0	0	0	1.2	0
WCT	1.7	1.1	1	2.4	0
YP	5.1	27.2	1	13.3	51.6
SubTotal Salmonids	1.7	1.1	2	33.9	9.0
<b>TOTAL CPUE</b>	<b>97</b>	<b>54.5</b>	<b>33.6</b>	<b>117.4</b>	<b>102.1</b>

## Spring Electrofishing Upper Section 2009 – 2013 Fish Per Hour (CPUE)

<b>Species</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
BL BH	3.4	0	0	0	0
BULL	0	0	0	0.5	0.5
LL	3.4	2.4	4.2	11.2	14.2
LN SU	0	0.5	0	0	0
LS SU	86.2	7.2	32.1	63.6	37.8
LT	1.7	0	0	0	0
MWF	1.7	0.5	6.3	10.1	11.0
NP	10.1	3.9	4.2	2.1	5.8
N PMN	10.1	1.4	8.9	18.7	15.2
RB	10.1	12.6	16.3	26.1	23.1
RBxWCT	0	0	0	1.1	0.5
RS SH	3.4	0	0	0.5	0.5
SMB	3.4	0	0.5	1.1	0.5
WCT	0	1.4	1.6	1.1	11.0
YP	0	0.5	3.7	0	0
SubTotal Salmonids	16.9	17	28.4	49.1	60.4
<b>TOTAL CPUE</b>	<b>133.5</b>	<b>30.4</b>	<b>77.8</b>	<b>135.1</b>	<b>120.4</b>

## Fall Electrofishing - CFR Above Islands (Right and Left Banks Combined), October 2013

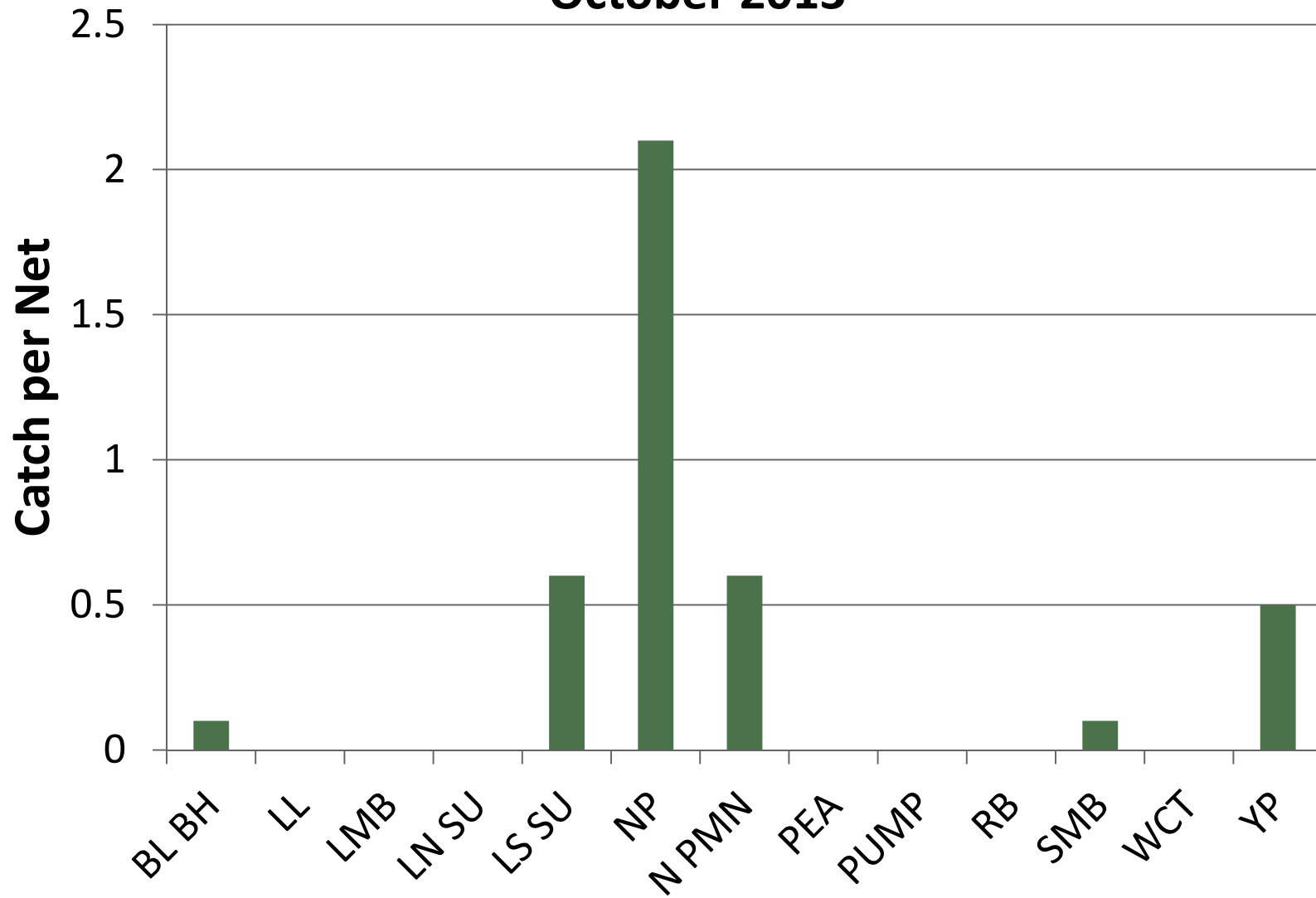


## Fall Electrofishing Above Islands 2009 – 2013

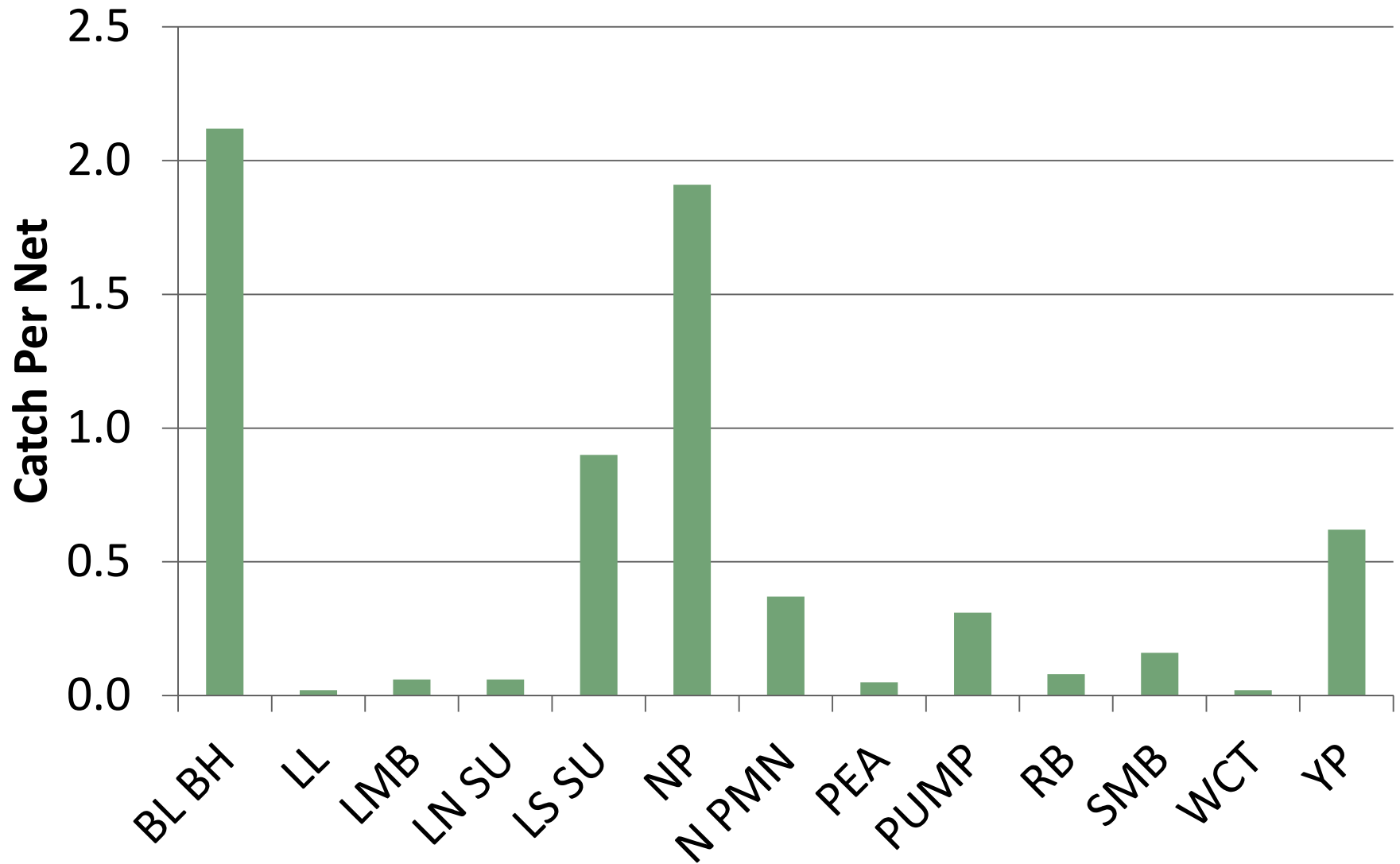
### Fish Per Hour (CPUE)

<b>Species</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
BULL	0	0.2	0.0	0.0	0.0
LL	0.9	1.2	1.5	3.9	1.8
LN DC	0.0	0.2	0.0	0.0	0.2
LN SU	0.0	0.2	0.4	0.2	0.5
LS SU	60.8	31.0	33.0	24.7	34.2
MWF	35.3	50.1	73.8	97.3	50.4
NP	2.0	1.9	2.4	2.9	4.6
N PMN	15.8	16.5	15.4	12.0	12.5
PEA	0.2	0.0	0.0	0.0	0.0
RB	7.9	6.8	8.6	9.1	5.5
RBxWCT	0.7	0.0	0.4	0.2	0.5
RS SH	0.0	1.2	2.0	0.5	1.6
SMB	0.2	0.9	1.3	0.5	2.1
WCT	1.6	1.2	1.3	0.5	2.3
YP	0.4	0.2	0.2	0.0	0.5
Subtotal Salmonids	46.4	59.4	85.7	111.0	60.4
<b>TOTAL CPUE</b>	<b>125.8</b>	<b>111.6</b>	<b>140.4</b>	<b>151.9</b>	<b>116.5</b>

## Thompson Falls Reservoir Gillnetting October 2013



## Gillnetting in Thompson Falls Reservoir Average Catch Per Net (2004-2013)





# Thompson Falls Reservoir Gillnetting October 2004– 2013 Catch Per Net

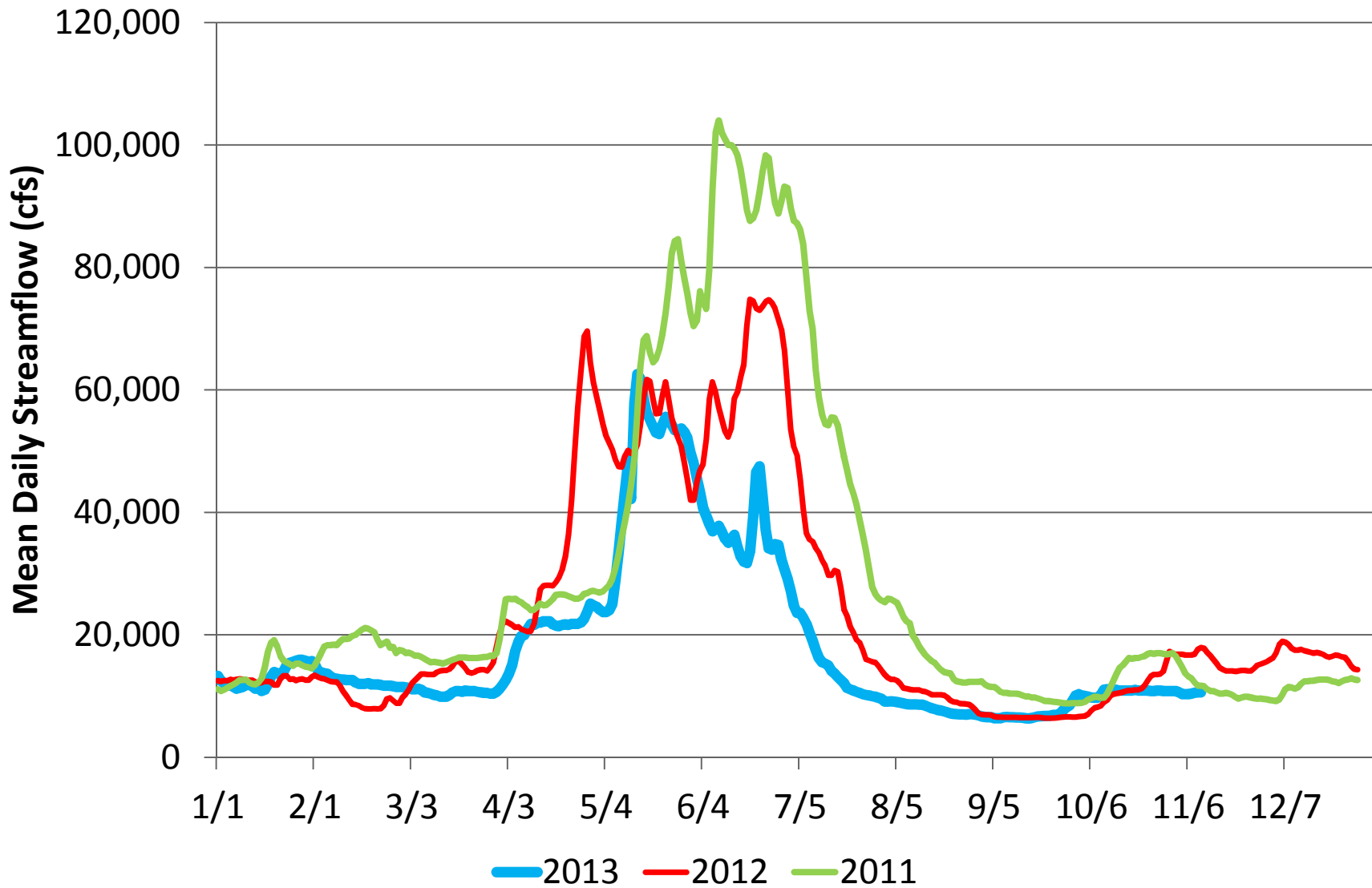
<b>Species</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
BL BH	2.8	3.4	8.3	6	0.6	0	0	0	0	0.1
LL	0	0	0	0	0	0	0	0	0.2	0
LMB	0.2	0	0	0.3	0	0	0	0.1	0	0
LN SU	0	0	0	0	0	0	0.1	0.5	0	0
LS SU	0.7	1.3	0.7	1	0.8	1.2	0.8	0.6	1.3	0.6
NP	1.3	1.8	1.7	2	1.3	3.1	2.4	1	2.4	2.1
N PMN	0.2	0	0.5	0.5	0.2	0.8	0.3	0.3	0.3	0.6
PEA	0	0.1	0.1	0.1	0	0	0.1	0.1	0	0
PUMP	0.3	0.1	0.2	0.5	1.8	0.1	0.1	0	0	0
RB	0	0	0	0	0	0.2	0.2	0	0.4	0
SMB	0.3	0.1	0	0.5	0.1	0	0.1	0.1	0.3	0.1
WCT	0	0	0	0	0	0	0	0.2	0	0
YP	1.7	0.7	0.1	1.2	0.2	0.1	0.9	0.4	0.4	0.5

# Thompson Falls Upstream Fish Passage 2013

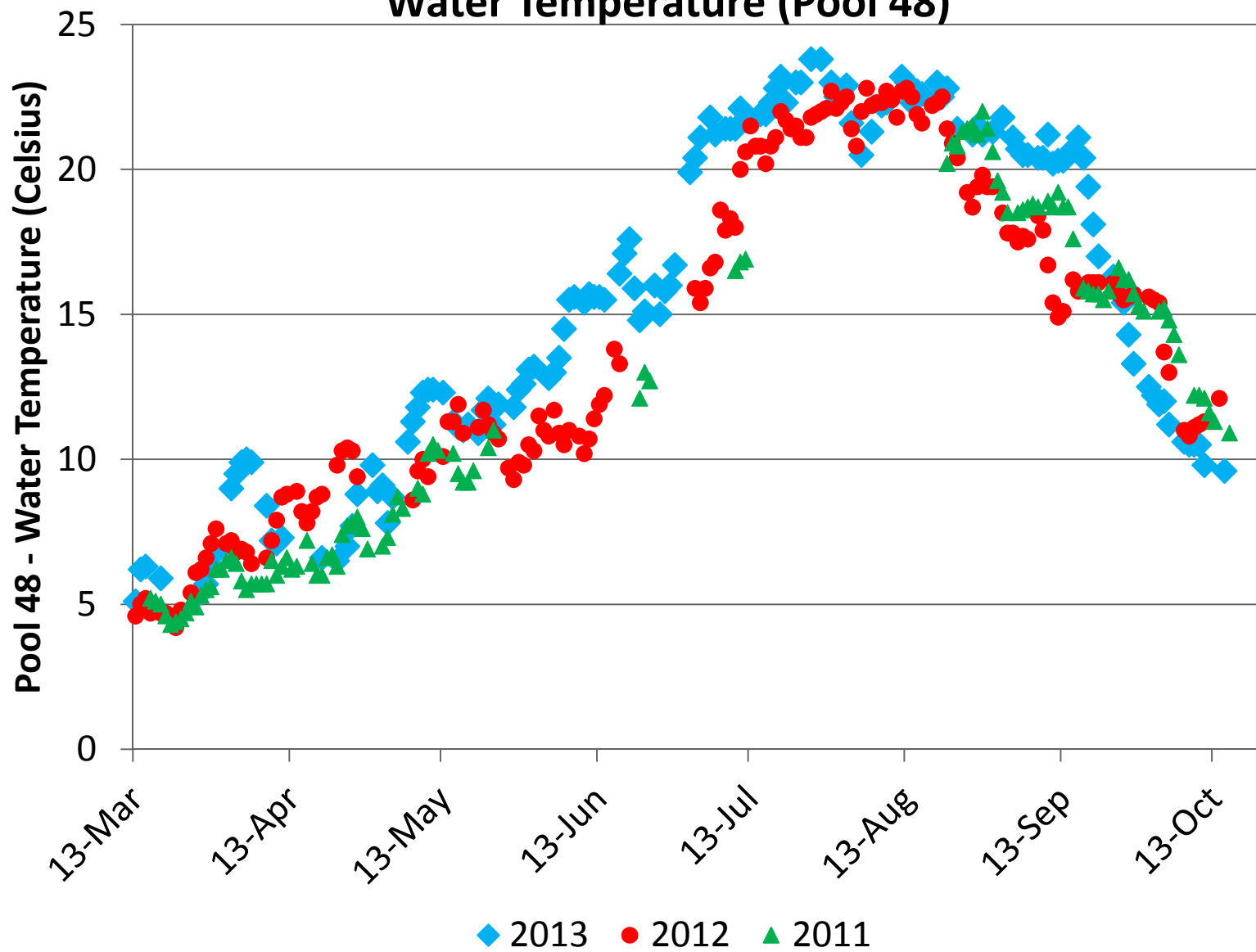
Ladder Operations

March 13 through October 15, 2013

## Mean Daily Streamflow in Clark Fork River near Plains (USGFS Gage Station)



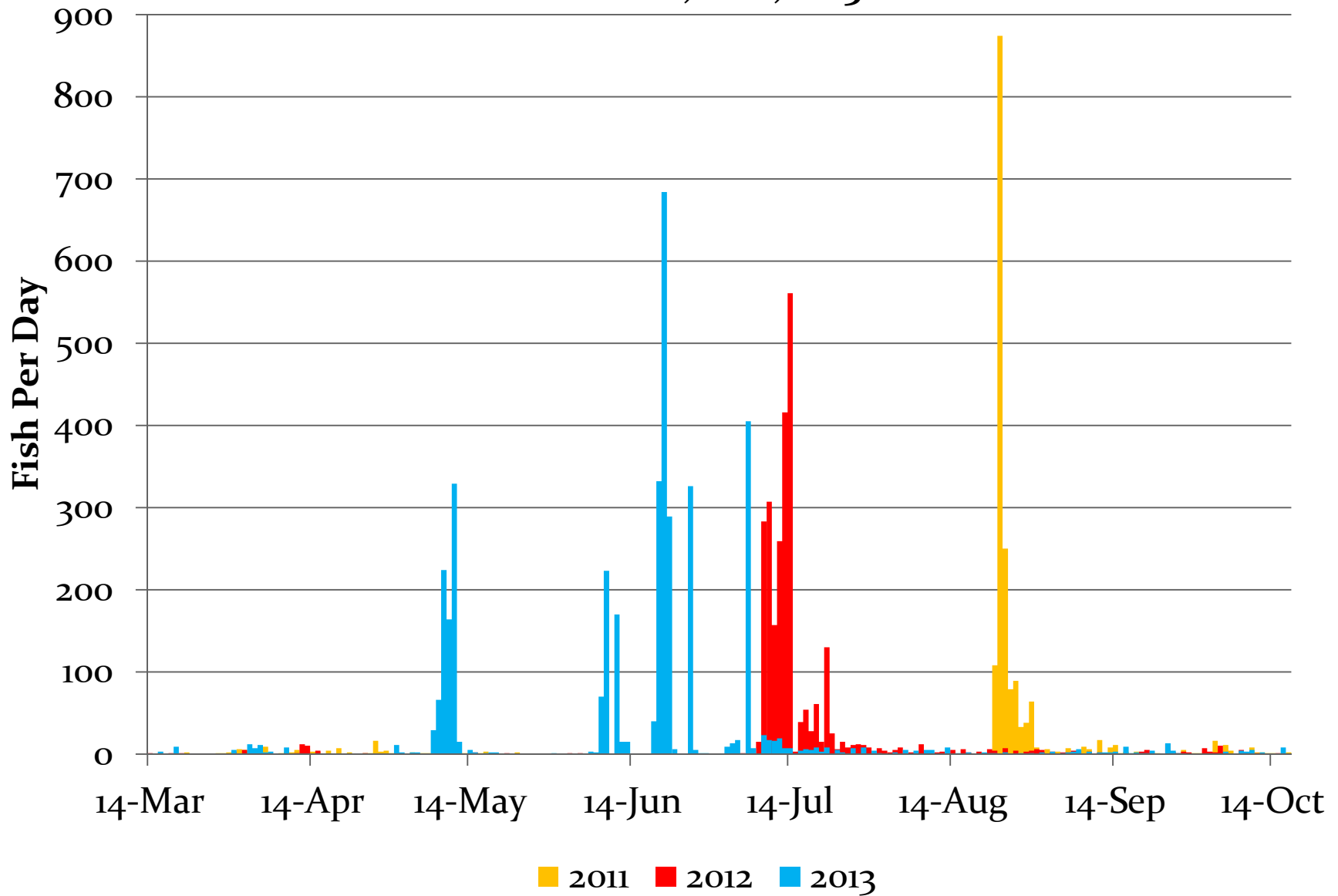
# Thompson Falls Fish Ladder Water Temperature (Pool 48)



## Thompson Falls Upstream Fish Passage Total Fish Recorded At the Ladder

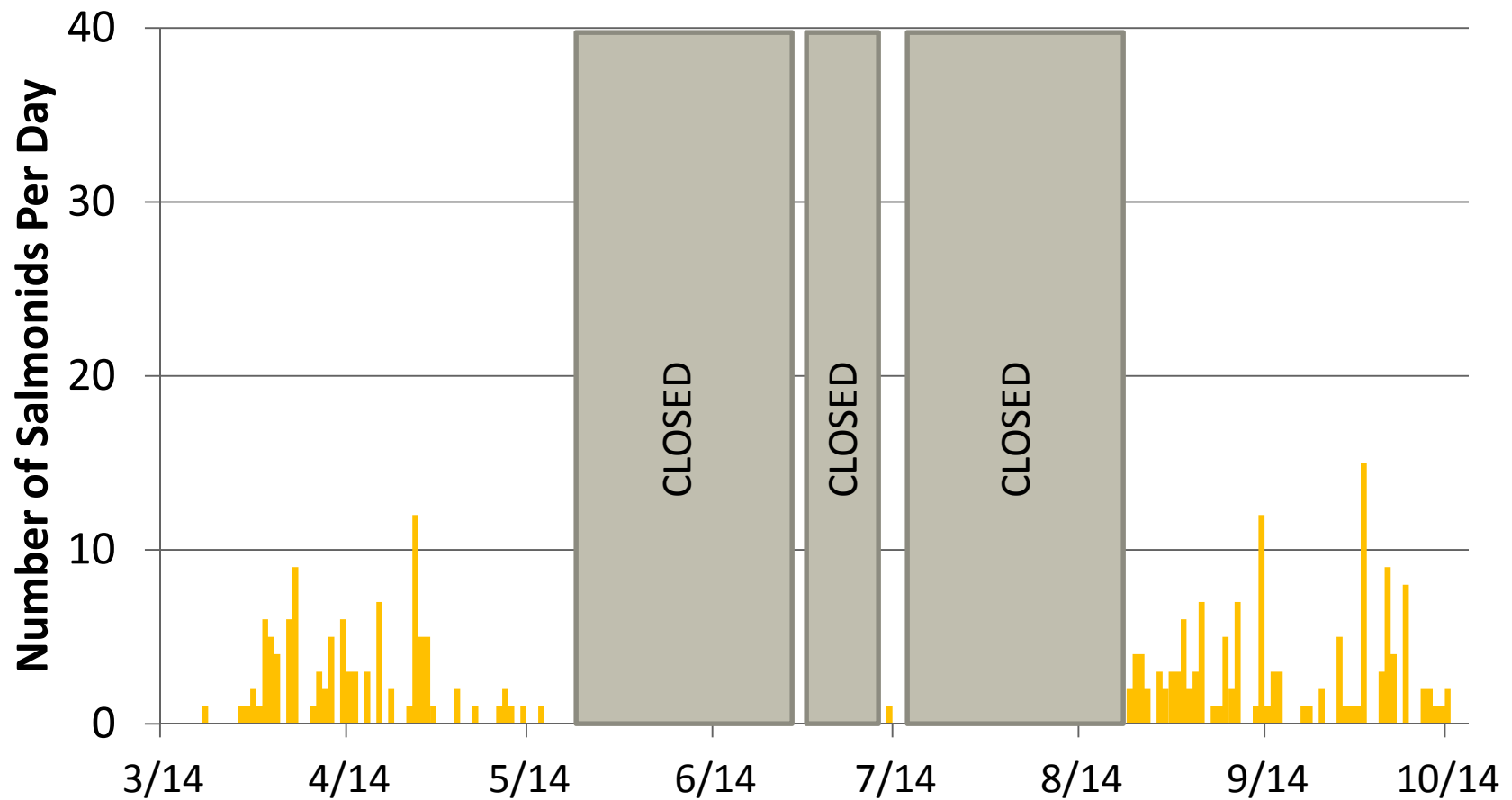
<b>Species</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Total</b>
BULL	2	2	5	<b>9</b>
RB	164	208	214	<b>586</b>
RBxWCT	9	7	12	<b>28</b>
WCT	21	21	48	<b>90</b>
LL	28	42	111	<b>181</b>
LS SU	418	1,403	3,041	<b>4,862</b>
LN SU	10	0	2	<b>12</b>
MWF	17	24	2	<b>43</b>
N PMN	1,000	926	387	<b>2,313</b>
SMB	135	34	8	<b>177</b>
LT	1	1	0	<b>2</b>
<b>Salmonids</b>	<b>242</b>	<b>305</b>	<b>392</b>	<b>939</b>
<b>TOTAL</b>	<b>1,805</b>	<b>2,668</b>	<b>3,830</b>	<b>8,303</b>

# Daily Fish Count at Thompson Falls Upstream Fish Passage 2011, 2012, 2013

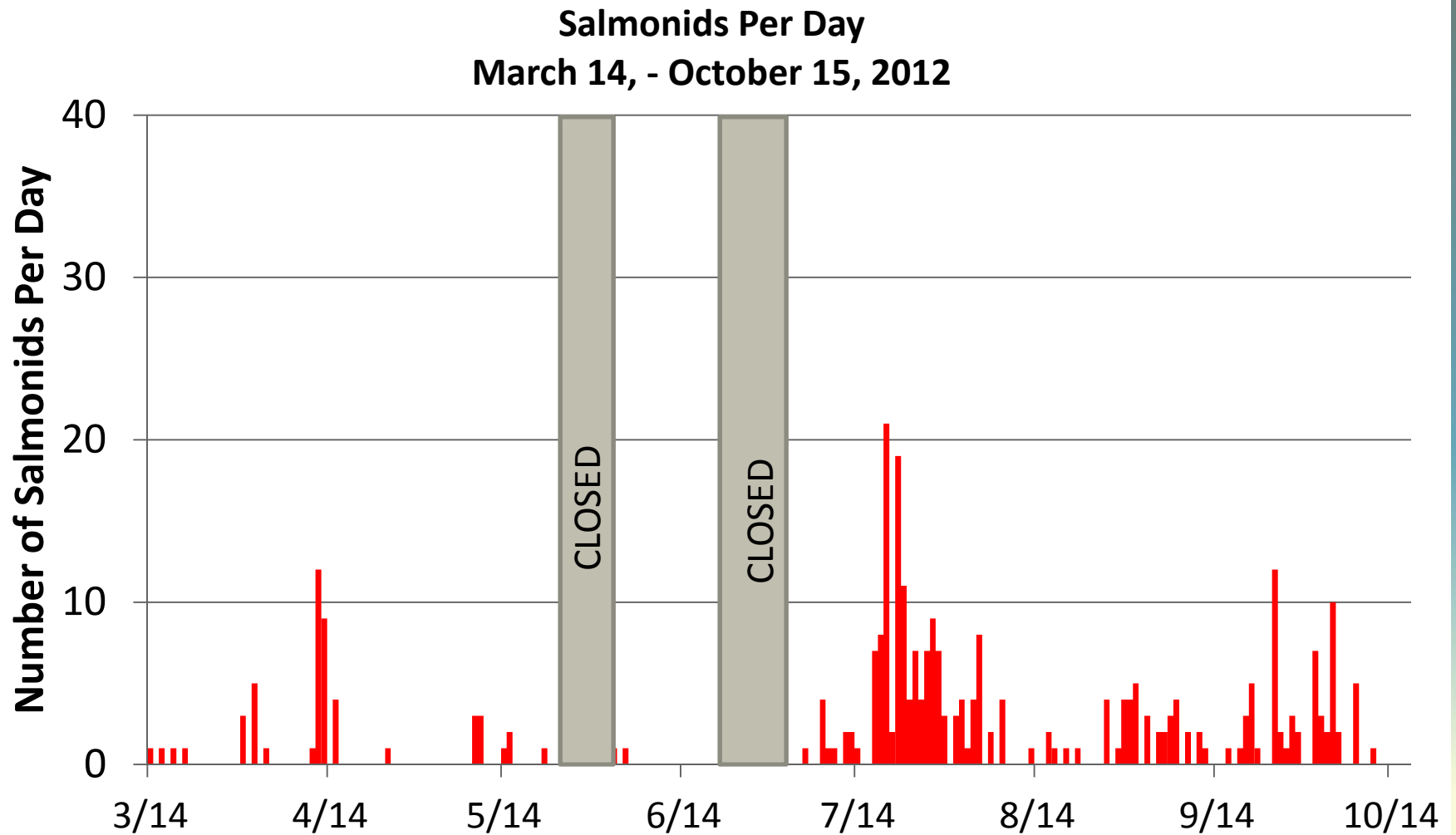


# Thompson Falls Upstream Fish Passage Salmonids at the Ladder 2011

Salmonids Per Day  
March 17 - October 17, 2011

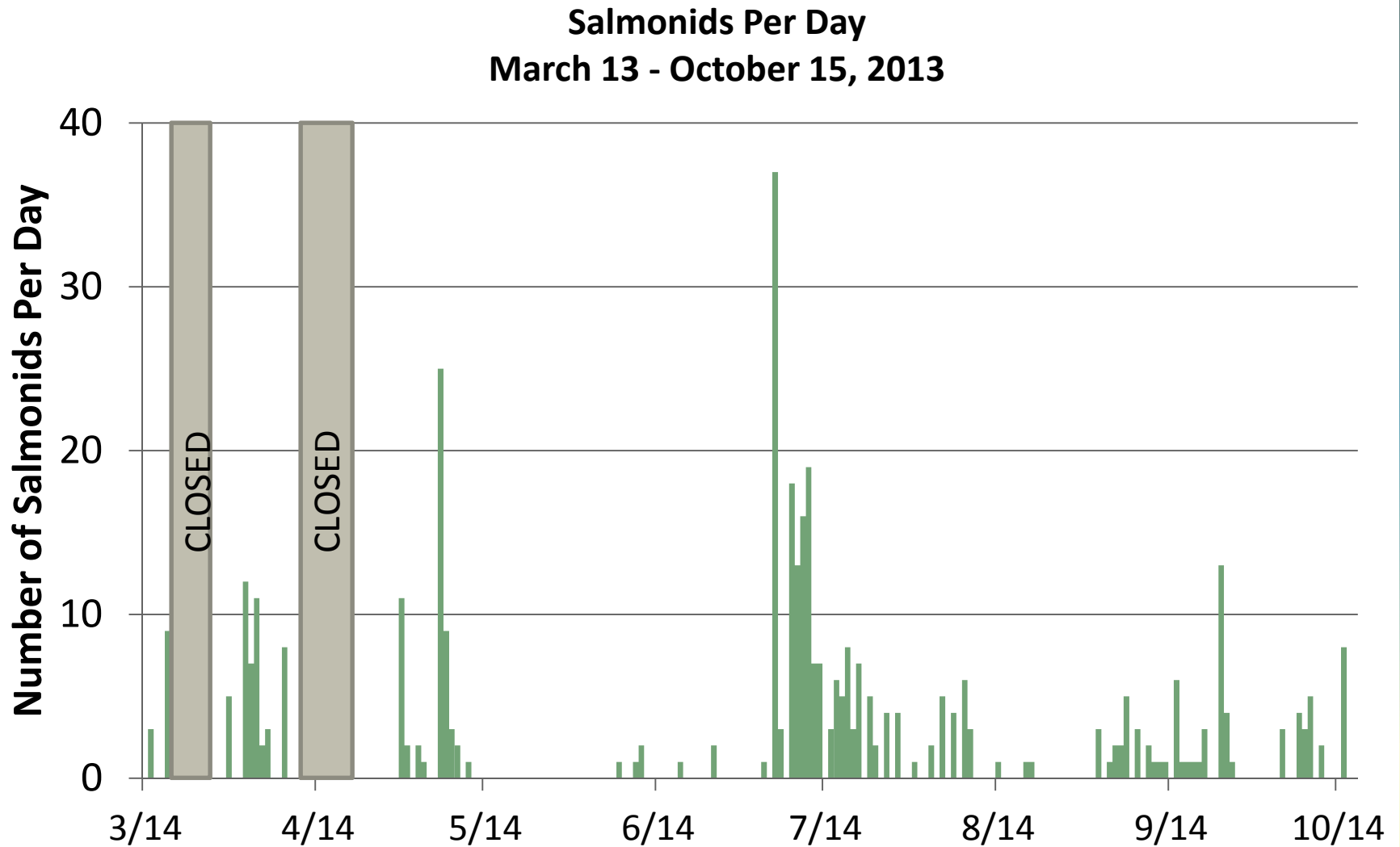


# Thompson Falls Upstream Fish Passage Salmonids at the Ladder 2012





# Thompson Falls Upstream Fish Passage Salmonids at the Ladder 2013





# Time Spent Ascending the Ladder

2011, 2012, 2013

**2011**

<b>Species</b>	<b>Number</b>	<b>Average Time (Hours)</b>	<b>Range of Time (Hours)</b>
RB	15		0.85 - 19.65
LS SU	1	3.6	
LL	1	10.8	
<b>Total</b>	<b>17</b>	<b>7.2</b>	

**2012**

<b>Species</b>	<b>Number</b>	<b>Average Time (Hours)</b>	<b>Range of Time (Hours)</b>
BULL	2	2.6	2.4 - 2.8
LL	1	1.1	
RB	18	2.2	0.7 - 4.4
MWF	1	2.1	
WCT	1	1.7	
LS SU	7	4.6	2.3 - 8.3
<b>Total</b>	<b>30</b>	<b>2.4</b>	

**2013**

<b>Species</b>	<b>Number</b>	<b>Average Time (Hours)</b>	<b>Range of Time (Hours)</b>
LL	14	2.0	1.0 - 3.3
RB	24	6.7	1.0 - 40.8
RBxWCT	1	19.1	
WCT	3	2.0	1.4 - 2.5
LS SU	10	11.6	1.7 - 31
<b>Total</b>	<b>52</b>	<b>8.3</b>	

# Recaptures At the Ladder

2013

<b>Ladder Tagging</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Totals</b>	<b>Tag Type</b>
<b>Species</b>	<b>Count</b>	<b>Count</b>	<b>Count</b>		
Bull	2		4	6	PIT
LL	27	40	97	164	PIT
RB	141	189	187	517	PIT
RBxWCT	9	7	11	27	PIT
WCT	20	20	45	85	PIT
MWF	17			17	PIT
N PMN	2			2	PIT
N PMN	1			1	Floy
LN SU	1			1	PIT
LS SU	6			6	PIT
SMB	73	30	7	110	Floy
<b>PIT Tags</b>	<b>226</b>	<b>256</b>	<b>344</b>	<b>826</b>	
<b>Floy Tags</b>	<b>74</b>	<b>30</b>	<b>7</b>	<b>111</b>	
<b>Total New Tags</b>	<b>300</b>	<b>286</b>	<b>351</b>	<b>937</b>	<b>PIT &amp; Floy</b>

<b>Ladder Recaptures</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Totals Number</b>	<b>Total %</b>
<b>Species</b>	<b>Count</b>	<b>Count</b>	<b>Count</b>		
Bull		1		1	17%
LL		2	6	8	5%
RB	19	9	23	51	10%
RBxWCT			1	1	4%
WCT	1		1	2	2%
MWF					
N PMN					
LN SU					
LS SU					
SMB		3		3	3%
PIT Tags	<b>20</b>	<b>12</b>	<b>31</b>	<b>63</b>	<b>8%</b>
Floy Tags	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>3%</b>
<b>Total Recaps</b>	<b>20</b>	<b>15</b>	<b>31</b>	<b>66</b>	<b>7%</b>

<b>Efishing Tagging Below Dam &amp; Recaps at Ladder Species</b>	<b>Totals Tags 2011 and 2012 Number</b>	<b>Total Observed at Ladder Number</b>	<b>% Observed at Ladder %</b>
Bull	4	1	25
EB	1		
LL	28	2	7.1
RB	148	15	10.1
RBxWCT	2		
WCT	24	3	12.5
MWF	81	1	1.2
LWF	1		
N PMN - PIT	7		
N PMN - FLOY	0		
LN SU	11		
LS SU	242	4	1.7
NP - FLOY	15		
SMB - PIT	1		
SMB - FLOY	4		
PIT Tags	550		
Floy Tags	19		
<b>Total</b>	<b>569</b>	<b>26</b>	<b>4.6</b>

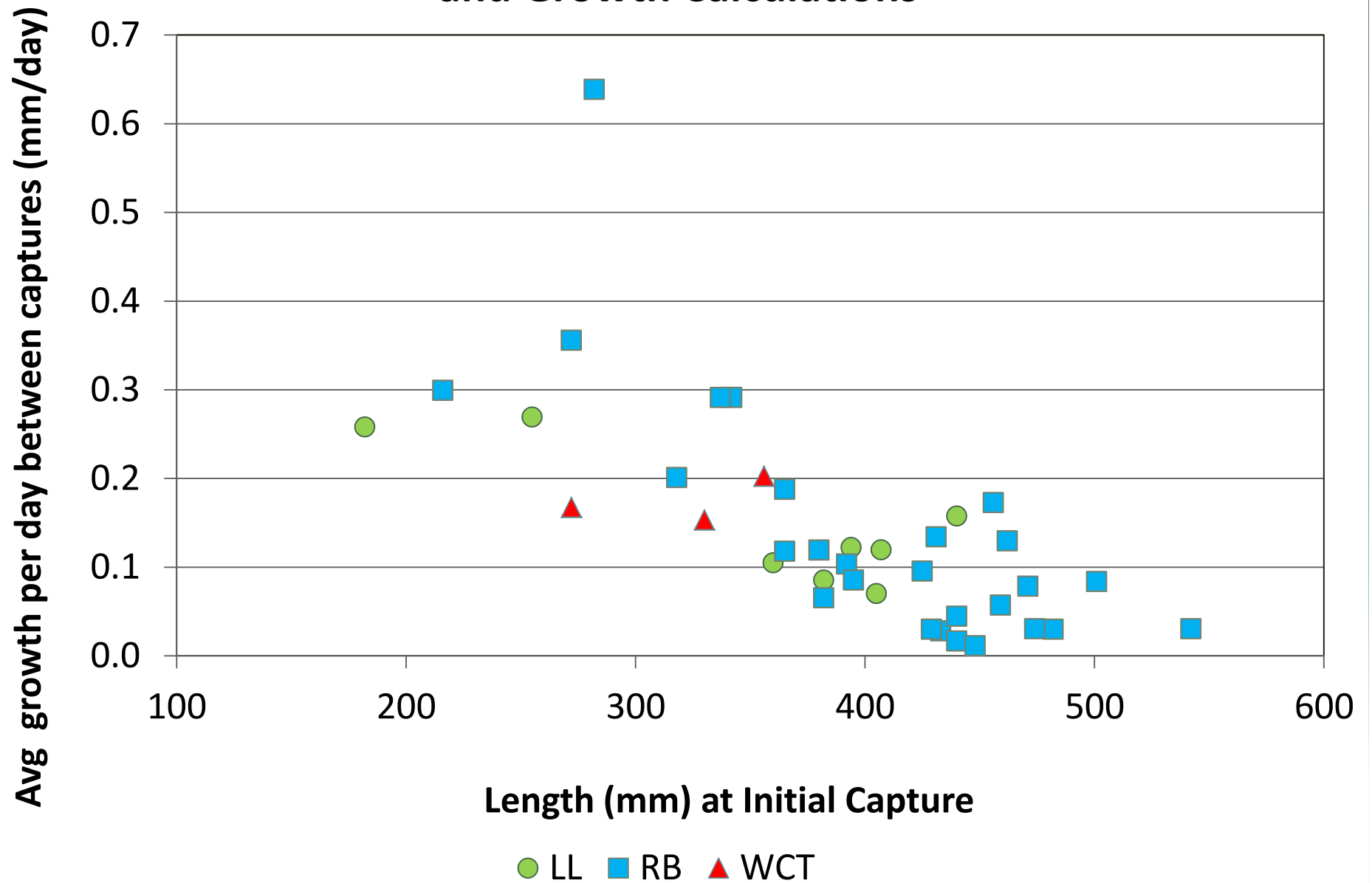
## Recaptures and Fish Growth – Ladder 2013

<b>Species</b>	<b>Count</b>	<b>Avg Duration (days)</b>	<b>Avg Length (mm)</b>	<b>Avg Growth (mm/yr)</b>	<b>Avg Weight (g)</b>	<b>Avg Growth (g/yr)</b>
LL	8	526	353	54	453	203
RB	27	376	405	50	707	265
WCT	3	492	319	64	852	293
<b>Overall Average</b>	<b>38</b>	<b>464</b>	<b>359</b>	<b>56</b>	<b>671</b>	<b>254</b>

Average Length and Weight Represent Size of Fish at Initial Capture



## Length of Fish From the First Ladder Ascent and Growth Calculations



## Fallback Evaluation – Ladder 2011, 2012, 2013

Species	2011	Average Duration (days)	2012	Average Duration (days)	2013	Average Duration (days)
RB	11	24	2	78	3	104
RBxWCT					1	36
WCT	2	17				

Fallback = Fish collected downstream of the dam within the same year of passing through the ladder

Duration = Number of days between initial observation at ladder and second observation at ladder/below dam

# Fish Morphology and Bull Trout at the Ladder

2013

## Fish Morphology – Ladder 2013

<b>Species</b>	<b>Count</b>	<b>Length Range (mm)</b>	<b>Weight Range (g)</b>
BULL	5	478 - 598	978 – 2,306
RB	214	169 - 587	58 – 1,774
RBxWCT	12	193 - 453	74 - 942
WCT	48	257 - 445	190 - 928
LL	111	251 - 675	146 – 3,832
LS SU	3,041	308 - 561	302-1,678
LN SU	2	362 - 426	454 - 752
MWF	2	339 - 349	334 - 384
N PMN	387	238 - 570	108 – 1,722
SMB	8	252 - 362	210 - 692

## Bull Trout Genetics in 2013

Date	L (mm)	Wt (g)	PIT #	Method & Location	Most Likely Population of Origin	Second Most Likely Population of Origin	Confidence
4/10	260	108	982000357016097	Upper Section Tfalls Reservoir (Efish)	<b>Fishtrap Creek (R4)</b>	Upper Rock Creek (R4)	200,000
4/30	598	2306	982000357016065	TFalls Ladder	<b>Fish Creek (R4)</b>	Cooper Gulch (R3)	6.87
5/6	576	1694	982000357016109	TFalls Ladder	<b>Fishtrap Creek (R4)</b>	EF Bull River (R2)	500,000
5/7	478	978	982000357016155	TFalls Ladder	<b>Fishtrap Creek (R4)</b>	EF Bull River (R2)	3,000,000
6/7	596	1926	HDX tag not recorded (Genetics 118-073)	TFalls Ladder	<b>Fishtrap Creek (R4)</b>	Rock Creek (R2)	147,622,000
8/9	482	1058	982000357016151	TFalls Ladder	<b>Fishtrap Creek (R4)</b>	Cooper Gulch (R3)	46,247,900

## Bull Trout At the Ladder 2011, 2012 Size, Water Temp, Streamflow

Date Recorded at Ladder	Length (mm)	Weight (g)	Water Temp (°C)	USGS Daily Mean Streamflow (cfs)
4/13/11	365	364	6.6	24,500
4/26/11	547	1438	7.8	25,900
5/15/12	510	1172	11.3	51,000
5/21/12	563	1404	11.1	56,100

## Bull Trout At the Ladder 2013 Size, Water Temp, Streamflow

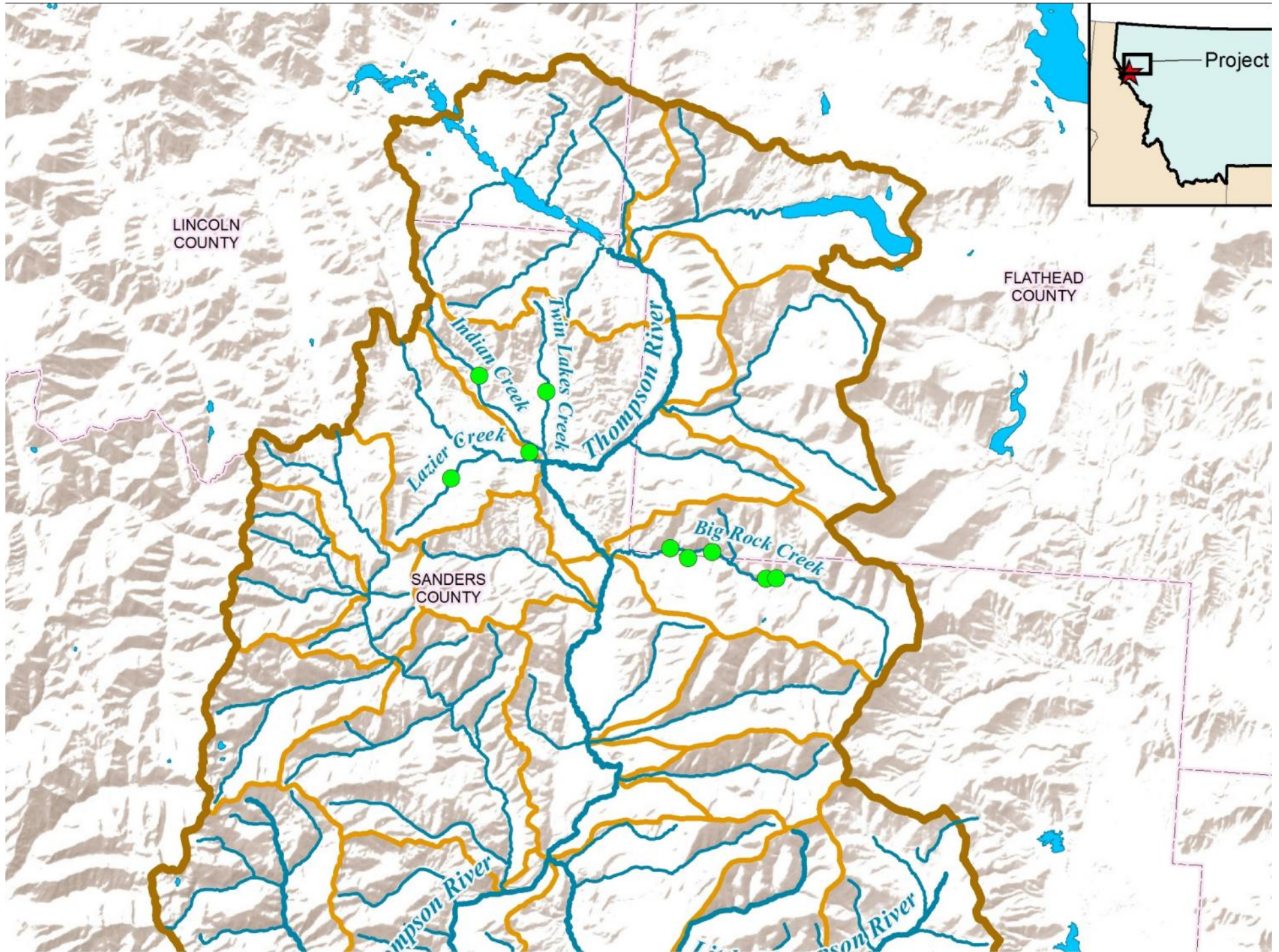
Date Recorded at Ladder	Length (mm)	Weight (g)	Water Temp (°C)	USGS Daily Mean Streamflow (cfs)
4/30/13	598	2306	8.9	25,100
5/6/13	576	1694	10.6	24,000
5/7/13	478	978	11.3	25,000
6/7/13	596	1926	15.5	38,100
8/9/13	482	1058	22.2	8,680



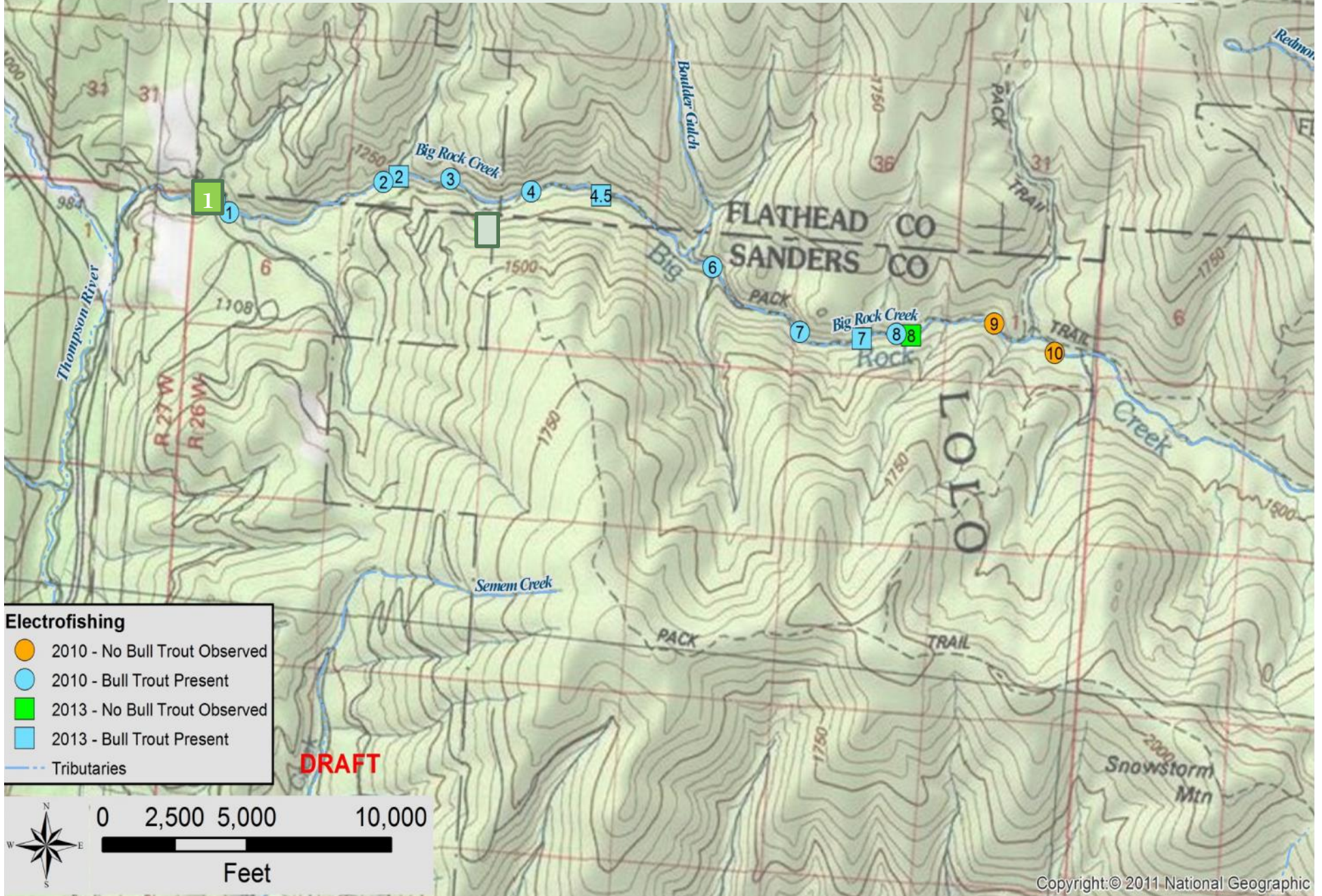
# Thompson River Tributary Electrofishing Surveys 2013

Big Rock Creek, Lazier Creek, Indian Creek, and  
Twin Lakes





# Big Rock Creek 2010 and 2013 Electrofishing Reaches



# Big Rock Creek 2013

Section	Species	Number	Fish Per Hour
1	WCT	57	26.5
	LL	37	17.2
2	Bull	1	0.5
	WCT (Hybrid)	92 (5)	42.6 (2.3)
	LL	1	0.5
4.5	Bull	20	10
	WCT	132	65.7
7	Bull	1	2.2
	WCT	35	76.1
8	WCT	169	117

# Indian & Upper Indian Creek 2013

Section	Species	Number	Fish Per Hour
Indian	EB	97	66.5
	LL	13	8.9
	RB	1	0.7
Upper Indian	WCT	43	96.5

# Lazier Creek & Twin Lakes 2013

Section	Species	Number	Fish Per Hour
Lazier	EB	2	4.5
	RB (Hybrid)	31 (1)	69.3 (2.2)
Twin Lakes	WCT	56	43



# 2013 Activities Continued...

- Avista Studies
- Spatially Explicit Decision Support Modeling
- Genetics
  - Fish, Cedar, Little Joe?
  - Jocko River?

# 2014 Activities

- 2014 Activities
  - Baseline Fisheries (Reservoir, Above Islands, Paradise-Plains, gillnetting)
  - Fish Ladder
    - Effective sample size (lengths and weights) ??
  - TDG/GBT if  $>75,000$  cfs
    - PIT tagging below dam?
  - Water Quality



# 2014 Proposals

- Thompson River Tributaries
- Genetics?
- USFS culvert removal Beartrap Creek?
- Graduate Study





# 2014-16 Graduate Study Overview

- Evaluation of Juvenile Bull Trout Outmigration in Thompson Falls Reservoir
  - Estimate Travel Time
  - Describe Travel Route
  - Describe Habitat Use
  - Estimate Survival Rate
- 3 MAP coded data-logging stations
  - Up-reservoir, down-reservoir, Thompson River confluence
- Manual tracking (bi-weekly) after 30 outmigrating bull trout telemetered



# Graduate Study Overview

- January 1, 2014 – December 30, 2016
- 2014 Activities
  - Autumn - Winter
    - acoustic tag bull trout, maintain receiver stations, manually track bull trout
- 2015 Activities
  - Summer
    - Maintain and deploy receivers
  - Autumn - Winter
    - acoustic tag bull trout, maintain receiver stations, manually track bull trout
- 2016
  - Data analysis and report

# Graduate Study Overview

- Costs

- 2014      \$49,910
- 2015      \$50,466
- 2016      \$29,728
- Total      \$130,324 plus PPLM purchases equip.

- Deliverables

- Annual Report on April 1, 2014?
- Annual report on April 1, 2015
- And Final Report (Master's Thesis) on December 30, 2016



# Other Topics

- Funding/Account Status
- Avista Fish Passage
- 2013 Annual Report Schedule
  - Draft Report to TAC for Review
- 2014 Annual TAC Meeting(s)



More?



Or Less?